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Dear Dr. Juan Carlos Salcedo Reyes

Please find enclosed for consideration the following manuscript entitled: “**CO2-capture at high temperature over hydroxyapatite extracted from tilapia-fish scales**”, by Oscar H. Ojeda-Niño, Carolina Blanco,Carlos E. Daza.

The results presented here show for the first time the extraction of hydroxyapatite (HAp) from the red tilapia-fish scales marketed in Colombia. The fish scales are an abundant and neglected residue of the fish farming industry and, therefore, the extraction of a high added value product, such as HAp, constitutes a significant contribution to the use of resources through solid state chemistry. In addition, this manuscript explores the possibility of using HAp as adsorbent in the CO2-capture and release at high temperature given the high Ca content of the material achieved. The use of a low-cost, easy-to-obtain solid in CO2-capture is an important improvement to greenhouse gas mitigation technologies.

In our research, we studied two methods for the extraction of HAp’s: calcination and acid-base treatment. We therefore performed the characterization of the hydroxyapatites by thermogravimetric analysis, X-ray fluorescence, X-ray diffraction, scanning electron microscopy, surface area, infrared spectroscopy and basicity measurement at 298 K by CO2-pulse titration. We established that the synthesis methods generate solids with different features that correlated with surface basicity and CO2-capture capacity. We report values ranging from 2.5 to 3.2 mg CO2/g captured at 973 K for HAp yielded by calcination and values between 1.2 to 2.5 mg CO2/g for HAp by acid-base treatment, which revealed the potential of HAp’s extracted from biogenesis sources as solids with high CO2-capture capacity, thermal stability and capture/release cycles reversibility.

We feel this would be of interest to your audience because is a study on the application of Material Science and Solid State Chemistry to afford a high added value functional material from an industrial waste with possible suitability in the mitigation of greenhouse gases which contributes significantly in the social, economic and environmental area.

The present paper has not been published previously and is not under consideration elsewhere. The authors are responsible for the reported research, and have participated in the concept and design, analysis and interpretation of data, drafting or revising of the manuscript, and have approved the manuscript as submitted. The data, models, and methodology used in the research are proprietary and comply with the legal requirements of Colombia.

We recommend three scientists in the field of catalysts, surfaces and CO2-technologies as referees:

Dr. Oscar Laguna, Universidad de Sevilla, Spain. His work focuses on structured-catalysts for biofuels synthesis, use of no-conventional gas, hydrogen production from alcohols and greenhouse gases transformations (olaguna@us.es).

Dr. Jaime Gallego-Marín, Universidad de Antioquia, Colombia. His work focuses on carbon nanotubes synthesis and applications, catalytic systems for CO2 conversion technologies and low-cost catalyst synthesis (andres.gallego@udea.edu.co).

Dr. Ksenia Parkhomenko, Université de Strasbourg, France. Her work focuses on low-cost catalytic systems, energy-production reactions and catalysts and surfaces for CO2 conversion technologies (parkhomenko@unistra.fr).

Thank you for your consideration of our work. Please address all correspondence concerning this manuscript to me by e-mail (cedazav@unal.edu.co).

Sincerely,

Carlos Enrique Daza Velásquez

Attachment: manuscript, figure files, table files.